

CLAIMS

- 5 1. Use of prokaryotic beta recombinase and its specific target sequences in eukaryotic cells.
2. Use of prokaryotic beta recombinase for transgenic work in eukaryotic cells.
- 10 3. Use according to claim 1 or 2 for controlling gene expression in eukaryots.
4. Use according to claim 1 or 2 for manipulating plant genomes in the generation of transgenic plants.
- 15 5. Use according to claim 1 or 2 in which the eukaryotic cells are mammalian cells.
6. Use according to claim 1 or 2 for manipulating pathogenic and Gram positive bacteria.
- 20 7. Use according to any of the previous claim for site-specific intramolecular recombination between two *six* sites in eukaryotic cells.
8. Use according to claim 7 for promotion of two or more different specific recombination events at a time.
- 25 9. Use according to claim 7 for mediating exclusively intramolecular reactions.
10. Use according to claim 7 in which the prokaryotic beta recombinase promotes the deletion of DNA sequences located between directly oriented *six* sites in
- 30 mammalian cells.

11. Use according to claim 7 in which the prokaryotic beta recombinase promotes the inversion of DNA sequences located between inverted repeated *six* sites in mammalian cells.

5 12. Use according to claim 10 in which the prokaryotic beta recombinase promotes deletion of a DNA fragment laying between two directly oriented *six* sites.

13. Use according to claim 12 in which the prokaryotic beta recombinase promotes inversion of a DNA fragment laying between two inversely oriented *six* sites .

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14. Use according to claim 13 in which the prokaryotic beta recombinase promotes deletion of a DNA fragment laying between direct repeat specific recognition sequences.

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15. Use according to claim 13 in which the prokaryotic beta recombinase promotes inversion of a DNA fragment laying between inverted repeated specific recognition sequences.

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16. Use according to claim 10, 11, 12 or 13 in which the specific recognition sequence is located as an extrachromosomal DNA substrate.

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17. Use of the gene coding for beta recombinase for catalysing site-specific resolution of DNA sequences in an extrachromosomal target introduced into an eukaryotic cell.

18. Use of the gene according to claim 17 for catalysing site-specific resolution of DNA sequences when extrachromosomal target is a plasmid.

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19. Use of the gene according to claim 17 or 18 in which the introduction is made by transfection.

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